

State Summary of Soil and Groundwater Cleanup Standards for Hydrocarbons

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State summaries of soil cleanup standards

Welcome to the Association for the Environmental Health of Soils' (AEHS) eighth annual survey of state-by-state cleanup standards for hydrocarbon contaminated soils. We conduct this survey each year in order to keep this useful information current and make it available to environmental professionals.

As in past years, contact people in each of the 50 states provided us with updated information on their regulatory programs. Many of the state programs have changed or are in the process of changing to Risk-Based Corrective Action (RBCA) approaches. Due to the many variations between state programs, the format of the summaries has become less standardized in an effort to accurately reflect each state's program. For example, readers should note that, for some states, categories of information no longer appear if the state does not provide that information or require its usage in its regulatory program.

While we publish these summaries as a handy reference of cleanup standards and procedures in each state, users should be aware of the limitations of summarizing regulatory programs in a table format and should contact each state for complete information. As in previous years, Connecticut, Colorado and Pennsylvania request that interested parties call for information because their programs are not easily summarized in a table format.

Note: Pennsylvania and Colorado are on the verge of publishing new standards, which were not ready in time for this year's survey. We are pleased to provide readers with summaries for Rhode Island and Arizona this year, which have not been available in previous years.

Telephone interviews with state contacts confirmed the continued move toward adopting RBCA approaches to setting cleanup standards. Most states already provide the option to cleanup parties of choosing to determine an alternate cleanup level, under specified conditions, based on a risk assessment of the site. In other cases, the agency in charge has no pre-determined standards and makes determinations solely on a site specific basis, as in the cases of North Dakota, California, Arkansas, and Idaho. Site specific considerations may include topography, geology, proximity to groundwater sources or surface water, setting (industrial, residential, commercial), well locations, land use activities, and type of contaminant(s) present.

Recently, several states, including Florida and Rhode Island, have promulgated cleanup standards based on a RBCA approach but divided up into various pathways, such as direct exposure and leachability, which are reflected in their summaries. Other than Florida and Rhode Island, 12 states reported that they are currently in the process of changing their programs to incorporate RBCA, or developing final rules for their RBCA programs.■

Acknowledgements:

The Association for the Environmental Health of Soils (AEHS) wishes to thank our state contacts for their help in updating the information for these summaries and for providing us with information on their rules, regulations, and recent program changes. We greatly appreciate the time and effort they put into working with us to make this information available to readers. Thanks also to Chris Page.■

Editor's Note:

Due to space constraints and the enormity of this project, the state summaries of groundwater cleanup standards will appear in **Soil & Groundwater Cleanup** in Spring 1998. We look forward to bringing you this information in an upcoming issue.■

The following states ask that interested parties call for information.

Colorado: For information, call the Technical Assistance Hotline at the Department of Labor & Employment, Oil Inspection Section: (303) 620-4029.

Connecticut: Remediation standard regulations have been adopted that detail remediation requirements for soil and groundwater. Please call the Department of Environmental Protection's Underground Storage Tank Program at (860) 424-3374.

Pennsylvania: New standards are expected by October 1, 1997, but were not available in time for publication in this survey. For information, call the Department of Environmental Protection's Bureau of Land Recycling & Waste Management at (717) 722-5599.■

Summary of Alabama Cleanup Standards for Hydrocarbon Contaminated Soil

Product	Parameter/ Constituent	Lab Test Protocol & Number ¹	Detection Level	Notification Level	Action Level	Cleanup Level
Gasoline	TPH ¹	EPA Method 4030, 9071, 418.1, 5520	*	Any amount	100 ppm	100 ppm**
	BTEX ²	EPA Method 8020	*	Any amount	**	**
	MTBE ²	EPA Method 8020	*	Any amount	**	**
Diesel	TPH ¹	EPA Method 4030, 9071, 418.1, 5520	*	Any amount	100 ppm	100 ppm**
	PAH ²	EPA Method 8100, 8310, 8270	*	Any amount	**	**
	BTEX ²	EPA Method 8020	*	Any amount	**	**
Waste Oil	TPH ¹	EPA Method 4030, 9071, 418.1, 5520	*	Any amount	100 ppm	100 ppm**
	PAH ²	EPA Method 8100, 8310, 8270	*	Any amount	**	**
	BTEX ²	EPA Method 8020	*	Any amount	**	**
	Lead	EPA Method 239.2, 7420, 7421	*	Any amount	Site Specific	Site Specific

¹ TPH analyses are required for closure site assessments. ² COC (Chemicals of Concern) testing is required for preliminary and secondary investigations only. ³ The department is currently evaluating the allowable test methods and expect changes to be made soon. Please contact the department for the latest requirements.

*Dictated by Method ** Risk Assessment may be used for an alternate corrective action limit.

Note: The ADEM (Alabama Department of Environmental Management) is currently developing a risk-based program. Cleanup levels can vary from the above listed values when a risk-based evaluation is made which can support alternate corrective action levels. The UST program is in the process of developing a risk-based program for alternate corrective action limits at UST release sites.

Contact: Dorothy Malaier, Alabama Department of Environmental Management 334-270-5613

Summary of Alaska Cleanup Standards for Hydrocarbon Contaminated Soil

Product	Parameter/ Constituent	Lab Test Protocol & Number	Detection Level	Notification Level	Action Level	Cleanup Level
Gasoline	Gasoline range Organics (C6-C9)	Alaska Method 101*	0.7mg/kg	any amount	Site Specific/ 50-1000mg/kg	Site Specific/ 50-1000mg/kg
	Total BTEX	Alaska Method 101* or EPA Method 8020, 8240, 8260	0.007mg/kg	any amount	Site Specific/ 10-100mg/kg	Site Specific/ 10-100mg/kg
	Benzene	Alaska Method 101* or EPA Method 8020, 8240, 8260	0.007mg/kg	any amount	Site Specific/ 0.1-0.5mg/kg	Site Specific/ 0.1-0.5mg/kg
Diesel	Diesel Range Organics (C10-24)	Alaska Method 102	0.5mg/kg	any amount	Site Specific/ 100-2000mg/kg	Site Specific/ 100-2000mg/kg
	Total BTEX	Alaska Method 101* or EPA Method 8020, 8240, 8260	0.007mg/kg	any amount	Site Specific/ 10-100mg/kg	Site Specific/ 10-100mg/kg
	Benzene	Alaska Method 101* or EPA Method 8020, 8240, 8260	0.007mg/kg	any amount	Site Specific/ 0.1-0.5mg/kg	Site Specific/ 0.1-0.5mg/kg
Waste Oil	Gasoline range Organics (C6-C9)	Alaska Method 101*	0.7mg/kg	any amount	Site Specific/ 50-1000mg/kg	Site Specific/ 50-1000mg/kg
	Diesel Range Organics (C10-24)	Alaska Method 102	0.5mg/kg	any amount	Site Specific/ 100-2000mg/kg	Site Specific/ 100-2000mg/kg
	Residual Range Organics (C25-C36)	Alaska Method 103		any amount	2000mg/kg	2000mg/kg
	Total BTEX	Alaska Method 101* or EPA Method 8020, 8240, 8260	0.007mg/kg	any amount	Site Specific/ 10-100mg/kg	Site Specific/ 10-100mg/kg
	Benzene	Alaska Method 101* or EPA Method 8020, 8240, 8260	0.007mg/kg	any amount	Site Specific/ 0.1-0.5mg/kg	Site Specific/ 0.1-0.5mg/kg

Note: (*) Asterisk indicates samples are preserved immediately with methanol in the field.
All soil standards are in the Alaska Underground Storage Tank Regulations, 18 AAC 78.

Contact: Cynthia Pring-Ham, Alaska Department of Environmental Conservation 907-465-5301

Summary of Arizona Cleanup Standards for Hydrocarbon Contaminated Soil

Product	Parameter/ Constituent	Lab Test Protocol & Number	Notification Level	Cleanup Level ¹	
				Residential	Non-Residential ²
Gasoline, Kerosene Jet Fuel	TPH	8015 AZ	50 to 80 mg/kg	7000 mg/kg	24,500 mg/kg
	Benzene	EPA Method 8021A	0.05 mg/kg	47 mg/kg	197 mg/kg
	Toluene	EPA Method 8021A	0.10 mg/kg	23,000 mg/kg	80,500 mg/kg
	Ethylbenzene	EPA Method 8021A	0.10 mg/kg	12,000 mg/kg	42,000 mg/kg
	Total Xylenes	EPA Method 8021A	0.15 mg/kg	230,000 mg/kg	805,000 mg/kg
	1,2-Dichloroethane*	***	****	15 mg/kg	63 mg/kg
	MTBE*	***	****	580 mg/kg	2030 mg/kg
	Benzo(a)pyrene**	***	****	0.19 mg/kg	0.80 mg/kg
	Naphthalene**	***	****	4,700 mg/kg	16,450 mg/kg
	TPH	8015 AZ	50-80 mg/kg	7000 mg/kg	24,500 mg/kg
Diesel, Light Fuel Oils	Benzo(a)pyrene**	Same as gasoline category			
	Naphthalene**	Same as gasoline category			
	1,2-Dichloroethane*	Same as gasoline category			
	MTBE*	Same as gasoline category			
Heavy Fuel Oils	TPH	Same as gasoline category			
	Benzo(a)pyrene**	Same as gasoline category			
	Naphthalene**	Same as gasoline category			
Waste Oil ³	TPH	Same as gasoline category			
	BTEX	Same as gasoline category			
	VOCs ⁴	EPA Method 8021A for 8021 AZ-listed analytes	****	****	****
	Benzo(a)pyrene	Same as gasoline category			
	Naphthalene	Same as gasoline category			
	TPH	Same as gasoline category			

Note: Arizona allows the choice of pre-determined standards (residential and non-residential) or risk assessment developed standards (residential and non-residential).

Contact: Michele Robertson, Arizona Department of
Environmental Quality (602) 207-4415

¹Risk assessment option exists. Protection of groundwater and surface water may require more stringent levels. ²Choice of cleanup to non-residential standards requires filing a Voluntary Environmental Mitigation Use Restriction (VEMUR) on property title with County Recorder. ³Initial analyses for BTEX, VOCs and PAHs are only required for the soil samples with the highest TPH concentration. Call the department for information on cleanup levels for VOCs and PAHs not listed in the table above. ⁴When VOC analyses are applicable, measure for the presence of the list of analytes for EPA Test Method 8021A.

*Measure for these or other specific petroleum additives when suspected. **Except in the case of waste oil releases, analyses for PAHs are only required in soils where TPH concentrations are below the non-residential cleanup level for TPH, unless a risk assessment is to be performed. ***Contact ADHS (Arizona Department of Health Services) for applicable analytical method(s). **** Contact the department for information.

Summary of Arkansas Cleanup Standards for Hydrocarbon Contaminated Soil

Product	Parameter/ Constituent	Lab Test Protocol & Number	Cleanup Level
Gasoline	BTEX*	8020, 8240/8260	Site Specific***
Diesel	PAH's	8100, 8310, 8250/8270	Site Specific***
Waste/Used Oil	PAH's**	8100, 8310, 8250/8270	Site Specific***

* Analysis for gasoline additives must be performed where possible or suspected. (total lead, MTBE, Ethanol/Methanol, EDB, etc.)

** VOC scan may be required where contamination by chlorinated or other solvents is possible or suspected. TCLP for metals may be required at the discretion of the case manager.

*** Clean-up requirements will be site-specific, after consideration of risk according to the ASTM or other accepted risk assessment protocol.

Note: Hydrocarbon remediation program for both soil and groundwater is now based on ASTM E 1739

Contact: James Atchley, Arkansas Department of
Pollution Control & Ecology 501-682-0972

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Summary of California Cleanup Standards for Hydrocarbon Contaminated Soil

Product	Parameter/ Constituent	Lab Test Protocol & Number	Detection Level	Notification Level	Action Level	Cleanup Level
Gasoline	TPH	DHS Recommended	*	any amount	**10 to 1,000ppm	Site Specific
	***Toluene	EPA Method 8020	5ppb	any amount	**NA to 50ppm	Site Specific
	***Xylene	EPA Method 8020	15ppb	any amount	**NA to 50ppm	Site Specific
Diesel	TPH	DHS Recommended	10ppm	any amount	**100 to 10,000ppm	Site Specific

BTEX same as Gasoline above. ➔

* Test Specific. ** There are three action levels associated w/ TPH & BTEX for sites which fall into categories low, medium and high.
 *** If BTEX levels are detectable, even though TPH concentration is below 10ppm gas or 100ppm Diesel, proceed from site investigation to the general risk appraisal. Note: California does not have state standard cleanup levels. Values shown are recommended action levels from the LUFT manual. Cleanup levels are site specific. California has 9 Regional Water Quality Control Boards throughout the state and 104 local agencies. The Regional Water Quality Control Board is generally the lead on complex unauthorized UST released, ground water cases and cases referred to them by the local agency. Larger implementing local agencies with staff, expertise, and Regional Water Quality Control Board concurrence may be the lead in overseeing corrective action to these cases. The jurisdiction or Regional Water Quality Control Board enforces site specific cleanup levels, detection levels, etc. If groundwater is contaminated, often times, drinking water standards or MCL's are imposed. Notification is required for all unauthorized releases unless the operator is able to clean up the release within 8hrs, it did not escape from a secondary containment, does not increase hazard of fire or explosion and did not deteriorate secondary containment of UST.
 Note: Report any amount which escapes secondary containment, or from primary containment if no secondary containment exists, increases the hazard of fire or explosion or causes deterioration of secondary containment.

Contact: Diane Trommer, California
 State Water Resources
 Control Board 916-227-4337

Note: The State of Delaware is currently developing a Risk Based Corrective Action (RBCA) Program, scheduled to be implemented in March 1998. Changes are anticipated. Please call the contact below for updated information after that date.

Summary of Delaware Cleanup Standards for Hydrocarbon Contaminated Soil

Product	Parameter/ Constituent	Lab Test Protocol & Number	Detection Level	Notification Level	Action Level*	Cleanup Level*
Gasoline	TPH	Mod 8015, Mod 418.1 EPA Method 9071	40 mg/kg	any amount	100 ppm	Site Specific generally ≤ 100
		APHA Methods 5520E/ 5520C, 503B, 503E	40 mg/kg	any amount		Same As Above
		California Method GC-FD or TPH-GRO	10 mg/kg	any amount		Same As Above
	BTEX	EPA Method 3010/8020, 5030/8020	1 mg/kg	any amount	BTEX > 10ppm B > 1ppm	Site Specific generally ≤ 10 BTEX, 1 B
		EPA Method 3810, 8240, 8240 purge & trap, Mod 602	1 mg/kg	any amount		
Diesel	TPH	as above or TPH-DRO	as above	any amount	1000 ppm	Site Specific generally ≤ 1000
Waste Oil	BTEX	as above	as above	any amount	BTEX > 10ppm B > 1ppm	Site Specific generally ≤ 10 BTEX, 1 B
	TPH	as above	as above	any amount	1000 ppm	Site Specific generally ≤ 1000ppm

* Class B Site. Note: Class A sites—more sensitive, more stringent. Class B sites—average sensitivity. Class C sites—less sensitive, less stringent. Sites are rated by the DE DNREC as either A, B, or C. Factors influencing ratings include well locations, groundwater depth, residential, commercial or industrial settings, etc.

Contact: Patricia M. Ellis, Ph.D., Delaware Department of Natural
 Resources & Environmental Control 302-323-4588

Summary of Florida Cleanup Standards for Hydrocarbon Contaminated Soil

Parameter/ Constituent	Lab Test Protocol & Number	Cleanup Level					
		Direct Exposure (mg/kg)		Leachability (mg/kg)			
		Residential Use	Worker/Industrial Exposure	(based on 4 different criteria levels):			
				a	b	c	d
Acenaphthene	***	2300	22000	4	0.6	0.6	40
Acenaphthylene	***	1100	11000	22	0.003*	0.003*	220
Anthracene	***	19000	290000	2000	0.3	0.3	20000
Benzo(a)anthracene	***	1.4	5.1	2.9	0.4	0.4	29
Benzo(a)pyrene	***	0.1	0.5	7.8	1.2	1.2	78
Benzo(b)fluoranthene	***	1.4	5	9.8	1.5	1.5	98
Benzo(g,h,i)perylene	***	2300	45000	13000	2	2	130000
Benzo(k)fluoranthene	***	15	52	25	1.5	1.5	250
Chrysene	***	140	490	80	0.5	0.5	800
Dibenzo(a,h)anthracene	***	0.1	0.5	14	2.2	2.2	140
Fluoranthene	***	2800	45000	550	0.4	0.4	5500
Fluorene	***	2100	24000	87	9.4	9.4	870
Indeno(1,2,3-c,d)pyrene	***	1.5	5.2	28	4.3	4.3	280
Naphthalene	***	1000	8600	1	1	1.3	10
Phenanthrene	***	1900	29000	120	0.02*	0.02*	1200
Pyrene	***	2200	40000	570	0.8	0.8	5700
Benzene	EPA Method 8020, 8021	1.1	1.5	0.007	0.007	0.5	0.07
Ethylbenzene**	EPA Method 8020, 8021	240	240	0.4	0.4	7.7	3.8
Toluene	EPA Method 8020, 8021	300	2000	0.4	0.4	4.8	4
Total Xylenes**	EPA Method 8020, 8021	290	290	0.3	0.3	5.3	2.9
1,2-dichloroethane	Not Required	0.6	0.9	0.02	0.02	0.7	0.2
MTBE	EPA Method 8020, 8021	350	6100	0.2	0.2	150	1.6
TRPHs	Not Required	350	2500	340	340	340	3400

Note: The detection limits shall meet the specified cleanup target levels. Values rounded to two significant figures if greater than 1 and to one significant figure if less than 1.

* Unless the Method Detection Limit (MDL) using the most sensitive and currently available technology is higher than the specified criterion. ** Direct Exposure values based on Soil Saturation Limit (Csat). *** EPA Method 8100, 8250, 8270 or 8310

† Testing for all parameters is required for all petroleum contaminated sites initially. Some parameters may be discontinued if not initially detected, with the concurrence of the department.

a Table V - Groundwater Cleanup Target Levels for Resource Protection/Recovery.

b Table VI - Lower of Table V and Freshwater Surface Water Criteria.

c Table VII - Surface Water Criteria for Resource Protection/Recovery.

d Table VIII - Low Yield/Poor Quality.

Contact: Thomas Conrardy, Florida Department of Environmental Protection 904-488-3935

Summary of Georgia Cleanup Standards for Hydrocarbon Contaminated Soil*

Product	Parameters	Lab Test Protocol & Number	Detection Level	Cleanup	
				Constituent	Level
Gasoline ¹ , Aviation Gas	BTEX PAHs TPH ²	EPA Method 8021/8260 and 8270/8310/8100 ³ and 8015 (GRO)	5.0 µg/kg 660 µg/kg 10 mg/kg	<i>Volatile Organic Compounds</i>	
				Benzene	0.005 mg/kg
				Toluene	0.400 mg/kg
				Ethylbenzene	0.370 mg/kg
				Xylenes (total)	20.00 mg/kg
Diesel and Kerosene, Jet Fuel A, #2 and #4 Fuel Oil	BTEX PAHs TPH ²	8021/8260 and 8270/8310/8100 ³ and 8015 (DRO)	5.0 µg/kg 660 µg/kg 10 mg/kg	<i>Polynuclear Aromatic Hydrocarbons</i>	
				Acenaphthene	N/A ⁷
				Anthracene	N/A ⁷
				Benzo(a)anthracene	N/A ⁷
				Benzo(a)pyrene	0.660 mg/kg ⁵
				Benzo(b)fluoranthene	0.820 mg/kg ^{5,6}
				Benzo(g,h,i)perylene	N/A ⁷
				Benzo(k)fluoranthene	1.60 mg/kg ^{5,6}
				Chrysene	0.660 mg/kg ⁵
				Dibenz(a,h)anthracene	1.50 mg/kg ^{5,6}
				Fluoranthene	N/A ⁷
				Fluorene	N/A ⁷
				Indeno(1,2,3-c,d)pyrene	0.660 mg/kg ⁵
				Naphthalene	N/A ⁷
				Phenanthrene	N/A ⁷
				Pyrene	N/A ⁷
Hydraulic Oil ⁴ , #5 and #6 Fuel Oil, Motor Oil, Used Oil	BTEX PAHs TPH ²	8021/8260 and 8270/8310/8100 ³ and 418.1	5.0 µg/kg 660 µg/kg 10 mg/kg		
Mineral spirits, Jet Fuel B, or unknown petroleum contents	BTEX PAHs TPH ²	8021/8260 and 8270/8310/8100 ³ and 8015 (GRO and DRO)	5.0 µg/kg 660 µg/kg 10 mg/kg		

Note: Soil cleanup levels shown here are for average or higher groundwater pollution susceptibility area (where public water supplies exist within 2.0 miles and/or non-public supplies exist within 0.5 miles). These levels also reflect a distance of less than or equal to 500 feet to withdrawal point. For information on cleanup levels in lower susceptibility areas and/or different distances from water sources or withdrawal points, call the department. Soil Alternate Threshold Levels (ATL) can be calculated based on site-specific data but still using applicable water standard (either MCL or Georgia In-Stream Water Quality Standard). Soil Alternate Concentration Limits (ACL) can be calculated based on site-specific data and ACL calculated for groundwater cleanup.

Notification levels are any amount.

¹BTEX analysis is always required, but PAHs are not required if the owner/operator, or agent thereof, can certify that only gasoline has been stored on site. ²For information on when to analyze soil for TPH, call for information on Section II.D.3. (a)(iii). ³Be aware that if PAHs are detected using Method 8100, you must use Method 8270 or 8310 to determine the concentrations of the individual PAHs. ⁴In some cases, hydraulic oil is exempt from UST regulations. Refer to GUST Rules for details (391-3-15-.02(2)(1)). ⁵Estimated Quantitation Limit. The health-based threshold level is less than the laboratory method limit of detection. ⁶In order to protect surface waters, stricter soil threshold levels may apply (call for information). ⁷Not applicable. The health-based threshold level exceeds the expected soil concentration under free product condition.

Contact: Shaheer Muhanna, Technical Assistance Officer, Georgia Department of Natural Resources
404-263-2687

Summary of Hawaii Cleanup Standards for Hydrocarbon Contaminated Soil

Product	Parameter/ Constituent	Lab Test Protocol & Number	Notification Level	Action Level		Cleanup Criteria
				Drinking Water Resource Threatened	Drinking Water Resource Not Threatened	
Gasoline	TPH as Gasoline	EPA Method 5030, 8015, LUFT	****	2000 / 2000 mg/kg		
	TPH Residual Fuels	EPA Method 5030, 8015, LUFT	****	5000 / 5000 mg/kg		Site Specific
	TPH Residual Distillates	EPA Method 5030, 8015, LUFT	****	5000 / 5000 mg/kg		Site Specific
	Xylene	*	****	23 / 23 mg/kg		Site Specific
	Benzene	*	****	0.05 / 1.7 mg/kg		Site Specific
	Ethylbenzene	*	****	.50 / .50 mg/kg		Site Specific
	Toluene	*	****	16 / 34 ppm		Site Specific
	Benzene	*	****	0.05 / 1.7 mg/kg		Site Specific
	Ethylbenzene	*	****	.50 / .50 ppm		Site Specific
	Toluene	*	****	16 / 34 mg/kg		Site Specific
	Naphthalene	***	****	41 / 41 mg/kg		Site Specific

* 5030/ 8015 or 5030/ 8020 or 5030/ 8240. ** 3550/ 8015 or 3540/ 8270 or 3550/ 8270 or LUFT Method. *** 3540/ 8310 or 3550/ 8310 or 3540/ 8270 or 3550/ 8270. **** All spills over 25 gallons that cannot be contained and cleaned up within 24 hours. ***** No Cleanup criteria based on TPH—however that does not preclude use as screening method.

Notes: 1. Groundwater action levels meet state surface water standards as a minimum and drinking water standards where applicable. 2. Constituent-specific soil action levels based on RBCA groundwater-protection and direct-exposure models. 3. Hawaii RBCA program can be used to develop more site-specific action levels for Soil.

Contact: Eric Sadoyama, Hawaii Department of Health, Solid and Hazardous Waste Branch
808-586-4226
esadoyama@cha.health.state.hi.us

Summary of Idaho Cleanup Standards for Hydrocarbon Contaminated Soil

Product	Parameter/ Constituent	Lab Test Protocol & Number	Detection Level	Notification Level	Action Level	Cleanup Level
Gasoline	Benzene	EPA Method 8020, 8240, 8015, 8021	*	any amount	Site Specific	Site Specific
	Toluene	EPA Method 8020, 8240, 8015, 8021	*	any amount	Site Specific	Site Specific
	Ethylbenzene	EPA Method 8020, 8240, 8015, 8021	*	any amount	Site Specific	Site Specific
	Xylenes	EPA Method 8020, 8240, 8015, 8021	*	any amount	Site Specific	Site Specific
	Naphthalene	EPA Method 8020, 8240, 8015, 8021	*	any amount	Site Specific	Site Specific
	MTBE	EPA Method 8020, 8240, 8015, 8021	*	any amount	Site Specific	Site Specific
Diesel	BTEX	EPA Method 8020, 8240, 8015, 8021	*	any amount	Same as Gas	Same as Gas
	PAH	EPA Method 8100, 8270, 525.5	*	any amount	Site Specific	Site Specific

* Dependent on sample matrix and concentration, 10 mg/kg target.

Note: Idaho has developed a RBCA program for assessment and cleanup of petroleum contamination.

Cleanup levels are site specific.

Contact: Bruce Wicherski, Idaho Division of
Environmental Quality 208-373-0260

Summary of Illinois Cleanup Standards for Hydrocarbon Contaminated Soil

Product	Parameter/ Constituent	Lab Test Protocol & Number	Detection Level	Notification Level	Action Level	Cleanup Level
Gasoline	Benzene	*	**	Any amount	.03 mg/kg	Site Specific
	Ethylbenzene	*	**	Any amount	13.0 mg/kg	Site Specific
	Toluene	*	**	Any amount	12.0 mg/kg	Site Specific
	Xylenes (total)	*	**	Any amount	18.00 mg/kg	Site Specific
Other petroleum	Naphthalene	*	**	Any amount	84 mg/kg	Site Specific
	Acenaphthene	*	**	Any amount	570 mg/kg	Site Specific
	Anthracene	*	**	Any amount	7.0 mg/kg	Site Specific
	Fluoranthene	*	**	Any amount	12,000 mg/kg	Site Specific
	Fluorene	*	**	Any amount	560 mg/kg	Site Specific
	Pyrene	*	**	Any amount	2,300 mg/kg	Site Specific
	Acenaphthylene	*	.660 mg/kg	Any amount	***	Site Specific
	Benzo(g,h,i) perylene	*	.051 mg/kg	Any amount	***	Site Specific
	Phenanthrene	*	.660 mg/kg	Any amount	***	Site Specific
	Benzo(a)anthracene	*	**	Any amount	.9 mg/kg	Site Specific
	Benzo(a)pyrene	*	**	Any amount	.09 mg/kg	Site Specific
	Benzo(b) fluoranthene	*	**	Any amount	.9 mg/kg	Site Specific
	Benzo(k) fluoranthene	*	**	Any amount	9.0 mg/kg	Site Specific
	Chrysene	*	**	Any amount	88 mg/kg	Site Specific
	Dibenzo(a,H) anthracene	*	**	Any amount	.09 mg/kg	Site Specific
	Ideno(1,2,3-cd) pyrene	*	**	Any amount	.9 mg/kg	Site Specific

*Any approved USEPA SW-846 method ** Detection level is test specific unless ADL is given.

*** Any amount above ADL Note: The Agency has adopted Risk-Based Corrective Action (RBCA) Regulations to determine cleanup objectives if action levels are exceeded.

35 Illinois Administrative Code Part 742, Tiered Approach to Corrective Action Objectives (TACO) gives the owner/operator the option to decide if the Tier 1 levels are the action levels or they may choose to calculate a Tier 2 or 3 cleanup objective and remediate to these levels if required.

Contact: Eric Portz, Illinois Environmental
Protection Agency 217-782-4869

Summary of Indiana Cleanup Standards for Hydrocarbon Contaminated Soil

Product	Parameter/ Constituent	Acceptable Methods	Detection Level	Notification Level	Action Level	Cleanup Level
Kerosene. Gasoline	Total Petroleum Hydrocarbons (TPH)	GC/FID 8015 -- Modified (California) or GC/MS 8240/60	20ppm	any amount	On-site ≥ 100 Off-site any amount	On-site ≤ 100 Off-site 20
Naptha. Diesel	TPH	GC/FID 8015 -- Modified (California) or GC/MS 8270	20ppm	any amount	On-site ≥ 100 Off-site any amount	On-site ≤ 100 Off-site 20
Waste Oil	VOC* and	GC/PID 8020 or GC/MS 8240/60	20ppm	any amount	Site Specific	Site Specific
	SVOC and	GC/MS 8270	20ppm	any amount	Site Specific	Site Specific
	TPH and	418.1 IR	20ppm	any amount	Site Specific	onsite ≤100 offsite 20
	PCB and	GC/ECD 8080/8081	1ppm	any amount	Site Specific	Site Specific
	Metals**	use the appropriate SW-846 method	set by the appro- priate method	any amount	Site Specific	Site Specific

* This analysis also should include Methyl-tertiary-butyl-ether (MTBE). ** Metal scans must include: Barium, Cadmium, Chromium (total), Lead, Mercury, Nickel, and Zinc. Note: If TPH >1000 ppb, then run other listed parameters.

Contact: Michael Anderson, Indiana Department of Environmental Management 317-308-3092

Iowa has adopted the ASTM RBCA method for addressing Petroleum Contaminated sites. See Action levels, Tier 1 table below. The action levels are used to determine when a Tier 1 investigation is required.

567-135.14(455B) Action levels. The following corrective action levels apply to petroleum regulated substances as regulated by this chapter. These action levels shall be used to determine if further corrective action under 135.6(455B) through 135.12(455B) or 135.15(455B) is required as the result of tank closure sampling under 135.15(2) or other analytical results submitted to the department. The contaminant concentrations must be determined by laboratory analysis as stated in 135.16(455B). Final cleanup determination is not limited to these contaminants. The contamination corrective action levels are:

Iowa Action Levels for Soils

Product	Soils (mg/kg)
Benzene	0.54
Toluene	42
Ethylbenzene	15
Xylene	No limit
Total Extractable Hydrocarbons	3,800

Contact: Jim Humeston, Iowa Department of Natural Resources 515-281-8957

Iowa Tier 1 Look-up Table

Media	Exposure Pathway	Group 1				Group 2 TEH	
		Receptor	Benzene	Toluene	Ethylbenzene	Xylenes	Diesel Waste Oil
Soil (mg/kg)	Soil Leaching to Groundwater	all	0.54	42	15	NA	3,800 NA
	Soil Vapor to Enclosed Space	all	1.16	48	79	NA	50,500 NA
	Soil to Plastic Water Line	all	1.8	120	43	NA	10,500 NA

Note: NA= Not applicable. There are no limits for the chemical for the pathway, because for groundwater pathways the concentration for the designated risk would be greater than the solubility of the pure chemical in water, and for soil pathways the concentration for the designated risk would be greater than the soil concentration if pure chemical were present in the soil.

TEH: Total Extractable Hydrocarbons. The TEH value is based on risks from naphthalene, benzo(a)pyrene, benzo(a)anthracene, and chrysene.

Diesel: Standards in the the diesel column apply to all low volatile petroleum hydrocarbons except waste oil.

Contact: Jim Humeston, Iowa Department of Natural Resources 515-281-8957

Summary of Kansas Cleanup Standards for Hydrocarbon Contaminated Soil

Product	Parameter/ Constituent	Lab Test Protocol & Number	Detection Level	Action Level	Cleanup Level
Gasoline	TPH	*	10ppm	100 ppm	100ppm
	Benzene	EPA Method 8015	.14ppm	1.4 ppm	1.4ppm
	1, 2 Dichloroethane	EPA Method 8015	.8ppm	8 ppm	8ppm
Diesel	TPH	*	10ppm	100 ppm	100ppm
Waste Oil	TPH	*	10ppm	100 ppm	100ppm

*Purge and trap, Summation of peaks chromatograph. IR method (418.1) is allowable for TPH analysis in soil for waste oil only

Contact: Thomas Winn, Kansas Department of Health & Environment 913-296-1684

Note: Kansas expects to implement a Risk-Based Corrective Action (RBCA) approach in 1998, but these standards will remain in place as baseline standards.

Summary of Kentucky Cleanup Standards for Hydrocarbon Contaminated Soil

Product	Parameter/ Constituent	Lab Test Protocol & Number	Detection Level	Notification Level	Action Level	Cleanup Level
Gasoline*	Benzene	EPA Method 8240, 8260, 8020 or 8021	0.01ppm	0.01ppm	0.01ppm	0.01 to 20ppm
	Toluene	EPA Method 8240, 8260, 8020 or 8021	0.7ppm	0.7ppm	0.7ppm	0.7 to 180ppm
	Xylene	EPA Method 8240, 8260, 8020 or 8021	5.0ppm	5.0ppm	5.0ppm	5.0 to 500ppm
	Ethylbenzene	EPA Method 8240, 8260, 8020 or 8021	0.9ppm	0.9ppm	0.9ppm	0.9 to 300ppm
Diesel	Chrysene	EPA Method 8100, 8270 or 8310	15,000ppb	15,000ppb	15,000ppb	15,000ppb
	Benzo(a)anthracene	EPA Method 8100, 8270 or 8310	150ppb	150ppb	150ppb	150ppb
	cPAH	EPA Method 8100, 8270 or 8310	300ppb	300ppb	300ppb	300ppb
	nPAH	EPA Method 8100, 8270 or 8310	3,000ppb	3,000ppb	3,000ppb	3,000 to 10,000ppb
	Naphthalene	EPA Method 8100, 8270 or 8310	1,000ppb	1,000ppb	1,000ppb	1,000 to 50,000ppb
Waste Oil	Chrysene	EPA Method 8100, 8270 or 8310	15,000ppb	15,000ppb	15,000ppb	15,000ppb
	Benzo(a)anthracene	EPA Method 8100, 8270 or 8310	150ppb	150ppb	150ppb	150ppb
	cPAH	EPA Method 8100, 8270 or 8310	300ppb	300ppb	300ppb	300ppb
	nPAH	EPA Method 8100, 8270 or 8310	3,000ppb	3,000ppb	3,000ppb	3,000 to 10,000ppb
	Naphthalene	EPA Method 8100, 8270 or 8310	1,000ppb	1,000ppb	1,000ppb	1,000 to 50,000ppb
	Total Lead	EPA Method 7420, 7421 or 6010	50ppm or established background	over background or >50ppm	over background or >50ppm	less than background or < 50ppm

* These values vary depending on facility classification, see 080E.

Contact: Doyle Mills, Division of Waste Management 502-564-6716

Louisiana Cleanup Standards

Louisiana Standards are handled on a site by site basis. Standards vary according to site conditions and program requirements. Call applicable division for standards.

UST (504) 765-0243
 General Inquiries (504) 765-0585
 Solid Waste (504) 765-0249
 Haz Waste (504) 765-0355
 CERCLA (504) 765-0487

Summary of Maine Cleanup Standards for Hydrocarbon Contaminated Soil

Product	Parameter/ Constituent	Lab Test Protocol & Number	Detection Level	Notification Level	Action Level	Cleanup Level
Gasoline	Total Gasoline	Gas Range Organics (4.2.17)	1ppm	100ppm by Field/Headspace*		5mg/kg**
Diesel	Total Fuel Oil	Diesel Range Organics (4.1.25)	5ppm	100ppm by Field/Headspace*		10mg/kg***

Same note as above

* using PID or FID calibrated to DEP-established calibration set points. (A list of approved instruments and their set points is available from DEP.)

** ST and IN sites only; BL-2 sites may be cleaned to 500-1000 ppm, measured by field/headspace

*** ST and IN sites only; BL-2 sites may be cleaned to 200-400 ppm, measured by field/headspace

Contact: Fred Lavallee, Maine Department of Environmental Protection 207-287-2651

Summary of Maryland Cleanup Standards for Hydrocarbon Contaminated Soil

Product	Parameter/ Constituent	Lab Test Protocol & Number	Notification Level (1)	Action Level	Cleanup Level (2)
Gasoline	BTEX, MTBE	EPA Method 602, 8020, 8240, 8260*	Any amount	> Background	Site Specific or 10 ppm
	TPH	EPA Method 8015M GRO	Any amount	> Background	Site Specific or 10 ppm
Diesel Fuel/ #2 Heating Oil	TPH	EPA Method 8015M DRO	Any amount	> Background	Site Specific or 10 ppm
	BTEX, Naphthalene	EPA Method 8020	Any amount	> Background	Site Specific or 10 ppm
Heavy Oil #4, 5, 6, Bunker C	TPH	EPA Method 418.1M**	Any amount	> Background	Site Specific or 10 ppm
	PAH	EPA Method 8270	Any amount	> Background	Site Specific or 10 ppm
Used Oil	TPH	EPA Method 418.1M**	Any amount	> Background	Site Specific or 10 ppm
	Full Volatile	EPA Method 8260	Any amount	> Background	Site Specific or 10 ppm
	TCLP Metals	EPA Method 6010	Any amount	> Background	Site Specific or 10 ppm
	PAH	EPA Method 8270	Any amount	> Background	Site Specific or 10 ppm

Note: There are no promulgated cleanup standards. All decisions on "how clean is clean" are made via site-specific risk characterization. For groundwater there are no promulgated cleanup standards.

Contact: Herb Meade, Maryland Department of the Environment 410-631-3442

If more than one of the suspected products listed above may be present in an excavation area, then analyses for all applicable constituents should be used to assess the soil. Test methods may be altered on a site-specific basis by an MDE representative. Sampling of a listed hazardous material storage system will be agreed upon on a site-specific basis. Soil treatment facilities and disposal sites may require further or different analyses.

*Full volatile 8260 may be required in domestic well areas. ** Being replaced by Method 1664.

Summary of Massachusetts Cleanup Standards for Hydrocarbon Contaminated Soil

Product	Parameter/ Constituent	Lab Test Protocol & Number	Notification Level (1)	Cleanup Level (2) A / B / C
Gasoline	Benzene	NS	10/60 µg/g	10-200 µg/g or site specific
	Toluene	NS	90/500 µg/g	90-2500 µg/g or site specific
	Ethylbenzene	NS	80/500 µg/g	80-2500 µg/g or site specific
	Total Xylenes	NS	500/500 µg/g	500-2500 or site specific
	MtBE	NS	0.3/200 µg/g	0.3-200 µg/g or site specific
	Naphthalene	NS	4/1000 µg/g	4-1000 µg/g or site specific
	C5-C8 Aliphatic Hydrocarbons	MADEP VPH	100/500 µg/g	100-500 µg/g or site specific
	C9-C12 Aliphatic Hydrocarbons	MADEP VPH	1000/2500 µg/g	1000-5000 µg/g or site-specific
	C9-C10 Aromatic Hydrocarbons	MADEP VPH	100/500 µg/g	100-500 µg/g or site specific
Diesel/ #2 Fuel	Naphthalene	NS	4/1000 µg/g	4-1000 µg/g or site specific
	2-Methylnaphthalene	NS	4/1000 µg/g	4-1000 µg/g or site specific
	Phenanthrene	NS	100/100 µg/g	100 µg/g or site specific
	Acenaphthene	NS	20/2500 µg/g	20-4000 µg/g or site specific
	C9-C18 Aliphatic Hydrocarbons	MADEP EPH	1000/2500 µg/g	1000-5000 µg/g or site specific
	C19-C36 Aliphatic Hydrocarbons	MADEP EPH	2500/5000 µg/g	2500-5000 µg/g or site specific
	C11-C22 Aromatic Hydrocarbons	MADEP EPH	200/2000 µg/g	100-500 µg/g or site specific

Note: µg/g = ppm mass/mass dry weight basis. NS=Not Specified in regulation. (1) Two notification thresholds have been established for "high" and "low" exposure potential areas. (2) Nine generic cleanup standards have been established depending upon exposure potential/accessibility of soil, and use/classification of underlying groundwater. Alternative cleanup levels are permissible based upon a site-specific risk characterization. See Massachusetts regulations 310 CMR 40.000 and associated support/policy documents for complete details and requirements - MADEP on the World Wide Web - <http://www.magnet.state.ma.us/dep>

Contact: John J. Fitzgerald, Massachusetts
Dept. of Environmental Protection
617-932-7702
e-mail: john.fitzgerald@state.ma.us

Summary of Michigan Cleanup Standards for Hydrocarbon Contaminated Soil

Product	Parameter/ Constituent	Lab Test Protocol & Number	Detection Level	Notification Level	Action Level	Cleanup Criteria Residential
Gasoline	Benzene	8020, 8021, 8240A, 8260A, CLP-SOW	10ppb	any amount	same as cleanup criteria	100ppb
	Toluene	8020, 8021, 8240A, 8260A, CLP-SOW	10ppb	any amount	same as cleanup criteria	16,000ppb
	Ethylbenzene	8020, 8021, 8240A, 8260A, CLP-SOW	10ppb	any amount	same as cleanup criteria	1500ppb
	Xylenes	8020, 8021, 8240A, 8260A, CLP-SOW	30ppb	any amount	same as cleanup criteria	5600ppb
Premium Gas	MTBE	8021, 8240A, 8260A	100ppb	any amount	same as cleanup criteria	4800ppb
Leaded Gas	Lead	6 listed methods	1000ppb			
	PNA's	EPA Method 1625C, 8270A, 8310, CLP-SOW	330ppb	any amount	same as cleanup criteria	Varies By Component

Note: Other metals and organic solvents of waste oils need to be tested for. Call MDNR for information. Alternative cleanup criteria may be available under certain circumstances.

Contact: Christine Flaga, Michigan Department
of Natural Resources, Environmental
Response Division 517-373-0160

Summary of Minnesota Cleanup Standards for Hydrocarbon Contaminated Soil

Product	Parameter/ Constituent	Lab Test Protocol & Number	Notification Level	Action Level	Cleanup Level
Gasoline	TPH	Wisconsin DNR GRO Method	any amount	40 ppm**	Site Specific****
	BTEX	*	any amount	40 ppm**	Site Specific****
	MTBE	*	any amount	40 ppm**	Site Specific****
Diesel	TPH	Wisconsin DNR DRO Method	any amount	10 ppm***	Site Specific****
	BTEX	*	any amount	10 ppm***	Site Specific****
Waste Oil	Same as Diesel				

* All samples, unless specifically noted, should use an EPA approved method or equivalent. ** Soil Vapor headspace analysis ≥ 40 ppm. *** Visual evidence of contamination or soil vapor headspace ≥ 10 ppm. **** Additional investigation needed if base, sidewall soil samples are >50 ppm TPH for sands.

Contact: Steve Thompson, Minnesota Pollution Control Agency, Tanks & Emergency Response 612-297-8603

Summary of Mississippi Cleanup Standards for Hydrocarbon Contaminated Soil

Product	Parameter/ Constituent	Lab Test Protocol & Number	Detection Level	Notification Level	Action Level	Cleanup Level
Gasoline	BTEX	EPA Method 602, 624, 8020, 8240, 8260	*	any amount	100 ppm or over	**
Diesel	TPH	EPA Method 418.1	4ppm	any amount	100 ppm or over	**
Waste Oil	TPH	EPA Method 418.1	1ppm	any amount	100 ppm or over	**

* Benzene-11.25ppb, Toluene-12.5ppb, Ethylbenzene-6.25ppb, Meta & Para Xylene-12.5ppb.
** 100ppm or less if no sensitive environmental receptors present.

Contact: Martha Martin, Mississippi Underground Storage Tank Division 601-961-5058

Summary of Missouri Cleanup Standards for Hydrocarbon Contaminated Soil

Product	Parameter/ Constituent	Lab Test Protocol & Number	Detection Level	Notification Level	Action Level	Cleanup Level
Gasoline	TPH	EPA Method 418.1 Modified	5.0ppm	25ppm	Site Specific	Site Specific/50-500ppm
	Benzene	EPA Method 8020 or 8240	.05ppm	.5ppm	Site Specific	Site Specific Min (Total BTEX <2 ppm)
	Toluene	EPA Method 8020 or 8240	.05ppm	Total BTEX 1ppm	Site Specific	Max (Benzene 2ppm, Toluene 10ppm)
	Ethylbenzene	EPA Method 8020 or 8240	.05ppm	Total BTEX 1ppm	Site Specific	Ethylbenzene 50ppm, Xylene 50ppm)
	Xylene	EPA Method 8020 or 8240	.05ppm	Total BTEX 1ppm	Site Specific	
Diesel	Same as Gasoline					
	BTEX	EPA Method 8240	Same as Gasoline			
	Heavy Metals	EPA Method 1311/6010 (TCLP)	40 mg/kg	Contact the Environmental Services Program, Site Specific		

Note: In January 1998 new regulations are expected to be implemented, with changes in reporting levels, cleanup levels and lab analysis. Contact Department of Natural Resources for information on new guidelines. Note: TCLP Regulatory levels in 40CFR 261.24.

Contact: Shirley Abshier, Missouri Department of Natural Resources 816-554-4100

Summary of Montana Cleanup Standards for Hydrocarbon Contaminated Soil

Product	Parameter/ Constituent	Lab Test Protocol & Number	Notification Level	Action Level	Cleanup Level
Gasoline	TPH	GRO**	100 ppm	>100ppm	Site Specific ≥100ppm
	Benzene	EPA Method 8020, 8260	1 ppm	>1ppm	Site Specific ≥1ppm
	Total BTEX	EPA Method 8020, 8260	10 ppm	>10ppm	Site Specific ≥10ppm
Diesel	TPH	DRO**	100 ppm	>100ppm	Site Specific ≥100ppm
Waste Oil	TPH	DRO** with a used oil standard	100 ppm	>100ppm	Site Specific ≥100ppm
	VOCs	EPA Method 8260		Site Specific	See above for BTEX*
	Cadmium, Chromium, Lead	Not Specified		Site Specific	*

* Contamination from metals and halogenated VOCs is under the jurisdiction of another program.

Contact: Scott Gestring, Montana Department of
Environmental Quality 406-444-1420

** Must be performed according to MDEQ guidelines.

Summary of Nebraska Recommended Cleanup Goals for Hydrocarbon Contaminated Soil

Product	Parameter/ Constituent	Lab Test Protocol & Number	Detection Level	Notification Level	Action Level	Cleanup Level
Gasoline	Benzene	EPA Method 8021, 8020 8240, 8260	≤ Cleanup Level	any amount		Site Specific
	Total BTEX	EPA Method 8021, 8020 8240, 8260	≤ Cleanup Level	any amount		Site Specific
	TRPH	EPA Method 418.1, OA2	≤ Cleanup Level	any amount		Site Specific
Diesel	Benzene	EPA Method 8021, 8020 8240, 8260	≤ Cleanup Level	any amount		Site Specific
	Total BTEX	EPA Method 8021, 8020 8240, 8260	≤ Cleanup Level	any amount		Site Specific
	TRPH	EPA Method 418.1, OA2	≤ Cleanup Level	any amount		Site Specific
Waste Oil*	TRPH	EPA Method 418.1, OA2	≤ Cleanup Level	any amount		Site Specific
	VOCs, SVOCs	EPA Method 8240/ 8260, 8270	≤ Cleanup Level	any amount		Established Case-By-Case

Note: Soil cleanup levels are based on site specific contaminants and exposure parameters.

Contact: Nancy Mann, Nebraska Department
of Environmental Quality
402-471-4230

Summary of Nevada Cleanup Standards for Hydrocarbon Contaminated Soil

Product	Parameter/ Constituent	Lab Test Protocol & Number	Detection Level	Notification Level	Action Level	Cleanup Level
Gasoline	TPH	EPA Method 8015 Modified	10 mg/kg	> 25 Gallons or 3 Cubic Yards	100 ppm	100 ppm
Diesel	TPH	EPA Method 8015 Modified	10 mg/kg	> 25 Gallons or 3 Cubic Yards	100 ppm	100 ppm
Waste Oil	TPH	EPA Method 8015 Modified, TCLP Inorganics	10 mg/kg	> 25 Gallons or 3 Cubic Yards	100 ppm	100 ppm

Contact: Jennifer Carr, Nevada Department of Conservation and Natural Resources 702-687-4670

Summary of New Hampshire Cleanup Standards for Hydrocarbon Contaminated Soil

Product	Parameter/ Constituent	Lab Test Protocol & Number	Detection Level	Notification Level	Action Level (ppm)	Cleanup Standard (ppm)
Gasoline	VOC and TPH (TPH as gasoline)	*	Test Specific	Same As Cleanup Level	Benzene>.3 1-2-Dichloroocthane>.09 Ethylbenzene >90 Isopropylbenzene>23 MTBE>3 Toluene>100 Xylenes>810 TPH>10,000	.3 .09 90 23 3 100 810 10,000
No's 2,4,5,6 Fuel Oil and Diesel	VOC, PAH and TPH (TPH as oil)	**	Test Specific	Same As Cleanup Level	VOCs and TPH Same As Above Napthalene >3 Acenaphthene >1,000 Benzo(a,h)pyrene >.7 Benzo(b)fluoranthene >7 Benzo(k)fluoranthene >7 Chrysene >70 Dibenzo(a)anthracene >.7 Fluoranthene >810 Indeno(1,2,3-cd)pyrene >.7 2-methylnaphthalene >150 >610ppm	3 1,000 .7 7 7 70 .7 810 .7 150 >610ppm
	Total Non- Carcinogenic PAHs					

* Initially 8260 plus MTBE and P&T-GC/FID for TPH. All other samples 8020 plus MTBE or 8240 plus MTBE and P&T GC/FID for TPH.

**Initially 8260, 8270/8310 and extraction GC/FID for TPH. All other samples 8020, 8240, 8260 or 8270/8310 and extraction GC/FID for PAH.

Contact: Frederick McGarry, P.E., New Hampshire
Department of Environmental Services
603-271-4978

Summary of New Jersey Cleanup Criteria for Hydrocarbon Contaminated Soil

Product	Parameter/ Constituent	Lab Test Protocol & Number	Detection Level	Notification Level	Cleanup Criteria*
Gasoline	Benzene	EPA Method SW 846	Test Specific	any amount	Residential / Non-Resid. / Impacted Groundwater 3mg/kg / 13mg/kg / 1mg/kg
	Toluene	EPA Method SW 846	Test Specific	any amount	1000mg/kg / 1000mg/kg / 500mg/kg
	Ethylbenzene	EPA Method SW 846	Test Specific	any amount	1000mg/kg / 1000mg/kg / 100mg/kg
	Xylene	EPA Method SW 846	Test Specific	any amount	< 410mg/kg / 1000mg/kg / 10mg/kg
	Anthracene	EPA Method SW 846	Test Specific	any amount	10,000mg/kg / 10,000mg/kg / 100mg/kg
	Naphthalene	EPA Method SW 846	Test Specific	any amount	230mg/kg / 4200mg/kg / 100mg/kg
	Lead	EPA Method SW 846	Test Specific	any amount	400mg/kg / 600mg/kg / NS
	Benzo (a) Pyrene	EPA Method SW 846	Test Specific	any amount	.66mg/kg / .66mg/kg / 100mg/kg
Diesel	Same As Above For Gasoline				

*Total Organic Compounds, CAP of 10,000mg/kg

Contact: Paul Kurisko, NJ Dept. of Environmental Protection,
Site Remediation 609-633-7413

Summary of New Mexico Cleanup Standards for Hydrocarbon Contaminated Soil

Product	Parameter/ Constituent	Lab Test Protocol & Number	Detection Level (ppm)	Action Level	Cleanup Level
Diesel	BTEX	EPA Method 8020	0.50ppm	*	*
	TPH	EPA Method 8015 Modified	25.0ppm	100 ppm	100ppm
Waste Oil	TPH Same as Diesel + Semi-volatiles, Volatiles, PCBs, Metals	EPA Method 418.1	25.0ppb	100ppm	100ppm
		Modified 8015		100ppm	100ppm
		TLCP		Per RCRA	Per RCRA
				Per RCRA	Per RCRA

* Total 50ppm and Benzene 10ppm

Contact: Steve Huddleson, New Mexico Environment Department 505-827-0173

Summary of New York Cleanup Standards for Hydrocarbon Contaminated Soil

Product	Parameter/ Constituent	Lab Test Protocol & Number	Detection Level	Notification Level	Action* Level	Cleanup Level
Gasoline	Benzene	EPA Method 8021 or 8020	2ppb	any amount	14ppb	Site Specific
	Ethylbenzene	EPA Method 8021 or 8020	2ppb	any amount	100ppb	Site Specific
	Toluene	EPA Method 8021 or 8020	2ppb	any amount	100ppb	Site Specific
	Xylene	EPA Method 8021 or 8020	2ppb	any amount	100ppb	Site Specific
	MTBE	EPA Method 8021 or 8020	1ppb	any amount	1000ppb	Site Specific
	Other Compounds Listed in STARS #1	EPA Method 8021	Compound Specific	any amount	Compound Specific	Site Specific
Diesel	Naphthalene	EPA Method 8021	1ppb	any amount	200ppb	Site Specific
	Fluorene	EPA Method 8270	330ppb	any amount	1000ppb	Site Specific
	Pyrene	EPA Method 8270	330ppb	any amount	1000ppb	Site Specific
	Other Compounds Listed in STARS #1	EPA Method 8021 or 8270	Compound Specific	any amount	Compound Specific	Site Specific
Waste Oil	PCBs	EPA Method 8270	Compound Specific	Compound Specific	Compound Specific	Compound Specific
	Halogenated Organics	EPA Method 8021	Compound Specific	Compound Specific	Compound Specific	Compound Specific
	See Diesel Parameters Above					

* These levels are based upon the highest concentration in the soil, which if analyzed by TCLP extraction method, would not yield a value in excess of the GW action level.

Contact: Chris O'Neill, New York Department of Environmental Conservation 518-457-9412

Summary of North Carolina Cleanup Standards for Hydrocarbon Contaminated Soil

Product	Parameter/ Constituent	Lab Test Protocol & Number	Detection Level	Notification Level***	Action Level***	Cleanup Level
Gasoline, Aviation Fuels	TPH	5030 sample prep. with modified 8015	MDL	10 ppm	10 ppm	Site Specific*
Diesel, Kerosene	TPH	5030 sample prep. with modified 8015	MDL	10 ppm	10 ppm	Site Specific*
		3550 sample prep. with modified 8015		40 ppm	40 ppm	
Heavy Fuels (Virgin Products)	TPH	9071	MDL	> 250 ppm	> 250 ppm	Site Specific*
Waste Oil	TPH	9071 ¹ 8021 (8270)	MDL	> 250 ppm > MDL (>MDL)	> 250 ppm > MDL (>MDL)	Site Specific*
Metals	Pb, Ba, As, Cd, Cr, Ag, Hg, Se	1311 (TCLP)	MDL	> Cleanup level **	> Cleanup Level	Naturally Occurring Background Concentrations

Note: MDL = Method Detection Limit. Laboratories must be certified by NC DWQ to perform all methods used.

Contact: Betty Wilcox, North Carolina Division of Water Quality 919-715-6167

*North Carolina uses a Site Sensitivity evaluation and risk-based levels to determine cleanup levels.

** Notify DWM-Hazardous Waste (919-733-2178) if TCLP limits are exceeded.

*** North Carolina is phasing out TPH-based action levels and adopting risk-based, compound-specific action and cleanup levels.

¹ If 9071 > 250 ppm, run 8270 with PCBs

Summary of North Dakota Cleanup Standards for Hydrocarbon Contaminated Soil

Product	Parameter/ Constituent	Lab Test Protocol & Number	Detection Level	Notification Level	Action Level	Cleanup Level
Gasoline	TPH	Modified EPA 8015		any amount	100 ppm	Site Specific
Diesel	TPH	Modified EPA 8015		any amount	100 ppm	Site Specific
Waste Oil	BTEX	EPA Method 8020		any amount	.5mg/l Benzene	
	Lead	EPA Method 239.2		any amount	5mg/l	
	TOX	EPA Method 9020, 9022		any amount	1000mg/l	

Contact: Dave Glatt, North Dakota
State Department of Health
701-328-5217

Summary of Ohio Cleanup Standards for Hydrocarbon Contaminated Soil

Product	Parameter/ Constituent	Lab Test Protocol & Number	Detection Level	Notification Level	Action Level	Cleanup Level
Gasoline	Benzene	EPA Method 8020	Method Specific	Action Level Based	0.006–0.500ppm	Site Specific
	Toluene	EPA Method 8020	Method Specific	Action Level Based	4–12ppm	Site Specific
	Ethylbenzene	EPA Method 8020	Method Specific	Action Level Based	6–18ppm	Site Specific
	Total Xylenes	EPA Method 8020	Method Specific	Action Level Based	28–85ppm	Site Specific
	TPH	Modified Method 8015	Method Specific	Action Level Based	105–600 ppm	Site Specific
Diesel	Benzene	EPA Method 8020	Method Specific	Action Level Based	0.006 –0.500	Site Specific
	Toluene	EPA Method 8020	Method Specific	Action Level Based	4–12ppm	Site Specific
	Ethylbenzene	EPA Method 8020	Method Specific	Action Level Based	6–18 ppm	Site Specific
	Total Xylenes	EPA Method 8020	Method Specific	Action Level Based	28–85ppm	Site Specific
	PNAs	EPA Method 8100	Method Specific	Any Level	Site Specific	Site Specific
	TPH	EPA Method 418.1	Method Specific	Any Level	380–1156ppm	Site Specific
Waste Oil	Volatile Organic Aromatics	EPA Method 8240	Method Specific	Any Level	Site Specific	Site Specific
	TPH	EPA Method 418.1	Method Specific	Action Level Based	380–1156ppm	Site Specific

Note: The State of Ohio is currently drafting rules that will detail how Risk Based Corrective Action (RBCA) is to be utilized in Ohio. Projected date of revised corrective action rule is April 1, 1998.

Contact: Raymond Roe, Ohio Department of Commerce 614-752-7938

Summary of Oklahoma Cleanup Standards for Hydrocarbon Contaminated Soil

Product	Parameter/ Constituent	Lab Test Protocol & Number*	Detection Level	Notification Level	Action Level	Cleanup Level
Gasoline, Diesel and Kerosene	TPH	EPA Method 8015	1ppm	any amount above action level	TPH>50ppm B>.5ppm	Site Specific RBCA Standards
	BTEX	EPA Method 8020	1ppm	any amount above action level	T>40ppm	Site Specific RBCA Standards
					E>15ppm	Site Specific RBCA Standards
					X>200ppm	Site Specific RBCA Standards

Note: Oklahoma uses a Remediation Index in determining cleanup standards on a site-by-site basis.

* Whatever method is specified must be able to detect the most stringent cleanup levels. EPA Method 418.1 is not accepted testing method for TPH.

Contact: Dick Oppel, Oklahoma Corporation Commission,
Underground Storage Tank Program 405-522-5264

Summary of Oregon Cleanup Standards for Hydrocarbon Contaminated Soil

Product	Parameter/ Constituent	Lab Test Protocol & Number	Detection Level	Notification Level	Cleanup Level
Gasoline	TPH	DEQ Method, TPH-G	10 mg/kg	any amount	Site Specific, Level 1=40ppm, Level 2=80ppm Level 3=130ppm
Diesel	TPH	DEQ Method, TPH-D or TPH-418.1	20 mg/kg	any amount	Site Specific Level 1=100ppm, Level 2=500ppm, Level 3=1000ppm.
Waste Oil	TPH	DEQ Method,TPH-418.1		any amount	(Same as Diesel)

Note: Oregon uses a site scoring matrix to determine TPH cleanup standards in soil. Oregon released interim guidance in April 1996 on the application of risk-based corrective action (RBCA) at petroleum cleanup sites. The implementation of risk-based decisions may affect how the cleanup levels in these tables are applied. Rule changes incorporating RBCA will be initiated in fall of 1997.

Contact: Michael Anderson, Oregon Department
of Environmental Quality 503-229-6764

**Summary of Rhode Island Standards for Hydrocarbon Contaminated Soil^a
Direct Exposure Criteria (Residential and Industrial/Commercial)**

Product	Parameter Constituent	Lab Test ^c Protocol & Number	Cleanup Level ^f Residential	Cleanup Level ^f Ind./Commercial
Gasoline	TPH	EPA Method 8015 Modified ^d	500 or 1000 ppm ^e	2500 ppm
	Benzene	EPA Method 8020, 8240 or 8260	2.5 ppm	200 ppm
	Toluene	EPA Method 8020, 8240 or 8260	190 ppm	10,000 ppm
	Ethylbenzene	EPA Method 8020, 8240 or 8260	71 ppm	10,000 ppm
	Xylenes (Total)	EPA Method 8020, 8240 or 8260	110 ppm	10,000 ppm
	MTBE	EPA Method 8020	390 ppm	10,000 ppm
	Naphthalene	EPA Method 8020 or 8260	54 ppm	10,000 ppm
Diesel	TPH	EPA Method 8015 Modified ^d or Method 8100 Modified ^e	500 or 1000 ppm ^e	2500 ppm
	BTEX, MTBE and Naphthalene	Same as gasoline	Same as gasoline	Same as gasoline
Waste Oil	TPH	EPA Method 8100 Modified ^e	500 or 1000 ppm ^e	Same as gasoline
	BTEX, MTBE and Naphthalene	Same as gasoline	Same as gasoline	Same as gasoline

a These Direct Exposure Criteria for contaminated soils are only applicable to sites managed under the RIDEM Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases (Remediation Regulations), as amended August 1996. Sites with hydrocarbon contaminated soil resulting exclusively from a Leaking Underground Storage Tank (LUST) are managed by the RIDEM LUST Program on a site by site basis.

b Preferred lab analytical test methods are recommended in the Remediation Regulations, but not specifically required.

c TPH by EPA Method 8015 modified (purge and trap) - GC/FID.

d TPH by EPA Method 8100 modified (extraction) - GC/FID.

e The Residential TPH Direct Exposure Criterion may be 1000 ppm contingent upon field-verification by Department personnel to ensure that short-term risks are managed appropriately prior to approval as a final remedial objective.

f The reportable concentrations for soil are the same as the cleanup levels.

Contact: Greg Fine, Rhode Island Department
of Environmental Management,
401-277-3872

**Summary of Rhode Island Standards for Hydrocarbon Contaminated Soil^a
Leachability Criteria (GA and GB)^b**

Product	Parameter/ Constituent	Lab Test ^c Protocol & Number	Cleanup Level ^f GA Leachability	Cleanup Level ^f GB Leachability
Gasoline	TPH	EPA Method 8015 Modified ^d	500 or 1000 ppm ^e	2500 ppm
	Benzene	EPA Method 8020, 8240 or 8260	0.2 ppm	4.3 ppm
	Toluene	EPA Method 8020, 8240 or 8260	32 ppm	54 ppm
	Ethylbenzene	EPA Method 8020, 8240 or 8260	27 ppm	62 ppm
	Xylenes (Total)	EPA Method 8020, 8240 or 8260	540 ppm	Not specified
	MTBE	EPA Method 8020	0.9 ppm	100 ppm
	Naphthalene	EPA Method 8020 or 8260	0.8 ppm	Not specified
Diesel	TPH	EPA Method 8015 Modified ^d or Method 8100 Modified ^e	500 or 1000 ppm ^e	2500 ppm
	BTEX, MTBE and Naphthalene	Same as gasoline	Same as gasoline	Same as gasoline
Waste Oil	TPH	EPA Method 8100 Modified ^e	500 or 1000 ppm ^e	Same as gasoline
	BTEX, MTBE and Naphthalene	Same as gasoline	Same as gasoline	Same as gasoline

a These Leachability Criteria for contaminated soils are only applicable to sites managed under the RIDEM Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases (Remediation Regulations), as amended August 1996. Sites with hydrocarbon contaminated soil resulting exclusively from a Leaking Underground Storage Tank (LUST) are managed by the RIDEM LUST Program on a site by site basis. Although the RIDEM LUST Program uses the Leachability Criteria as goals, the standards are not enforceable by the regulations covering LUSTs.

b Groundwater classified as GA is presumed to be suitable for use as drinking water without treatment. Groundwater classified as GB is presumed to be degraded and not suitable for use as drinking water without treatment.

c Preferred lab analytical test methods are recommended in the Remediation Regulations, but not specifically required.

d TPH by EPA Method 8015 modified (purge and trap) - GC/FID.

e TPH by EPA Method 8100 modified (extraction) - GC/FID.

f The GA TPH Leachability Criterion may be 1000 ppm and may be field-verification at the discretion of the Department to ensure that short-term risks are managed appropriately prior to approval as a final remedial objective.

g The reportable concentrations for soil are the same as the soil cleanup levels.

Contact: Greg Fine, Rhode Island Department
of Environmental Management,
401-277-3872

Summary of South Carolina Cleanup Standards for Hydrocarbon Contaminated Soil

Product	Parameter/ Constituent	Lab Test Protocol & Number	Detection Level	Notification Level	Action Level	Cleanup Level
Gas, Diesel, Kerosene	Benzene	8260	5 ppb	any amount	5 ppb	site specific/risk
	Toluene	8260	5 ppb	any amount	730 ppb	site specific/risk
	Ethylbenzene	8260	5 ppb	any amount	1190 ppb	site specific/risk
	Xylene	8260	5 ppb	any amount	16,900 ppb	site specific/risk
	Naphthalene	8260	5 ppb	any amount	70 ppb	site specific/risk
	MTBE	8260	5 ppb	any amount	40 ppb	site specific/risk
	Benzo(a)anthracene	8270	660 ppb	any amount	660 ppb	site specific/risk
	Benzo(B)fluoranthene	8270	660 ppb	any amount	660 ppb	site specific/risk
	Benzo(k)fluoranthene	8270	660 ppb	any amount	1260 ppb	site specific/risk
	Chrysene	8270	660 ppb	any amount	660 ppb	site specific/risk
Waste Oil	Dibenz(a,h)anthracene	8270	660 ppb	any amount	1260 ppb	site specific/risk
	Same as Gasoline					
	TPH	9071	10 ppm	any amount	NA*	site specific/risk
	Metals	AA-ICP	**	any amount	**	site specific/risk

Note: Action levels are for impacted soil located less than 5 feet from groundwater. For depths to groundwater exceeding 5 feet, action levels are higher. Contact: Read Miner, South Carolina Department of Health & Environmental Control 803-734-5327

*No action or cleanup levels. TPH is used solely to determine necessity of performing expanded analyses.

**Best obtainable reporting level. Necessity of action based on comparison with background.

Summary of South Dakota Cleanup Standards for Hydrocarbon Contaminated Soil

Product	Parameter/ Constituent	Lab Test Protocol & Number	Detection Level	Notification Level	Action Level	Cleanup Level
Gasoline	Benzene	EPA 8020, 8015 or equivalent	.2ppm	above detection levels	**	**
	Toluene	EPA 8020, 8015 or equivalent	15ppm	above detection levels	**	**
	Ethylbenzene	EPA 8020, 8015 or equivalent	10ppm	above detection levels	**	**
	Xylene	EPA 8020, 8015 or equivalent	300ppm	above detection levels	**	**
	TPH*		500ppm	above detection levels	**	**
Diesel	Naphthalene	If >25 must be confirmed by GC/MS		25ppm	**	**
	TPH*		500ppm	0.1ppm	**	**
Waste Oil	TPH*		500ppm	0.1ppm	**	**
	(Other constituents based on composition of waste oil)					

* California/ USGS method or similar methods that can quantify TPH by integrating all detectable peaks within the time period in which 95% of the recoverable hydrocarbons are eluted.

** Cleanup is not required if risks to human health are not present. Source removal is required. If risks are present cleanup is done to site specific target levels or the Tier I action Levels(detection levels).

Contact: Doug Miller, Department of Environmental and Natural Resources 605-773-3296

Summary of Tennessee Cleanup Standards for Hydrocarbon Contaminated Soil

Product	Parameter/ Constituent	Lab Test Protocol & Number	Detection Level	Notification Level	Action Level	Cleanup Level ¹
Gasoline	Benzene	SW-846 5030 P&T, 8020 GC	0.002 ppm	> 5.0 ppm	> 5.0 ppm	5.0 ppm to 100 ppm
	TPH-GRO	TN TPH-GRO	5.0 ppm	> 100 ppm	> 100 ppm	100 ppm to 1000 ppm
Diesel Range	TPH-DRO	TN TPH-DRO	4.0 ppm	> 100 ppm	> 100 ppm	100 ppm to 1000 ppm
Waste Oil	TPH	418.1 or 503E	100 ppm	> 100 ppm	>100 ppm	100 ppm to 1000 ppm

¹ Cleanup levels are based on groundwater classification and soil permeability.

Contact: Curtis Hopper, Tennessee Department of Environment and Conservation 615-532-0956

Summary of Texas Cleanup Standards for Hydrocarbon Contaminated Soil

Product	Parameter/ Constituent	Lab Test Protocol & Number	Detection Level	Notification Level	Action Level	Cleanup Level
Gasoline	Benzene	EPA Method 8020	.5mg/kg	any amount	*	Site Specific/Risk-based**
	Toluene	EPA Method 8020	.5mg/kg	any amount	*	Site Specific/Risk-based**
	Ethylbenzene	EPA Method 8020	.5mg/kg	any amount	*	Site Specific/Risk-based**
	Xylene	EPA Method 8020	.5mg/kg	any amount	*	Site Specific/Risk-based**
	TPH	EPA Method 418.1	10mg/kg	any amount	*	None***
Diesel	Benzene	EPA Method 8020	.5mg/kg	any amount	*	Site Specific/Risk-based**
	Toluene	EPA Method 8020	.5mg/kg	any amount	*	Site Specific/Risk-based**
	Ethylbenzene	EPA Method 8020	.5mg/kg	any amount	*	Site Specific/Risk-based**
	Xylene	EPA Method 8020	.5mg/kg	any amount	*	Site Specific/Risk-based**
	TPH	EPA Method 418.1	10mg/kg	any amount	*	None***
Waste Oil	PAHs	EPA Method 8100, 8270, 8310	Chemical Specific	any amount	*	Site Specific/Risk-based**
	BTEX	EPA Method 8020	.5mg/kg each	any amount	*	Site Specific/Risk-based**
	TPH	EPA Method 418.1	10mg/kg	any amount	*	None***
	VOCs PAH	EPA Method 8240 EPA Method 8100, 8270, 8310	Chemical Specific Chemical Specific	any amount any amount	* *	Site Specific/Risk-based** Site Specific/Risk-based**

* Product Specific/ Site Specific.

Contact: Chris Chandler, Texas Natural Resource
Conservation Commission 512-239-2200

** No Range Available. Based on set procedures. ***Not used for establishing cleanup goals.

Utah has implemented Tier 1 RBCA - the following Cleanup levels are "screening levels" and can only be applied when the Tier 1 worksheet is complete and no receptors are within 30 feet of the source area.

Utah Action Levels for Soils

Product	Soils (mg/kg)
Benzene	9
Toluene	61
Ethylbenzene	23
Xylenes	235
Naphthalene	10
TPH-gasoline	1500
TPH-diesel	5000
Oil & Grease/TRPH	10,000

Contact: Robin D. Jenkins, Division of Environmental Response and Remediation
801-536-4100

Summary of Vermont Cleanup Standards for Hydrocarbon Contaminated Soil

Product	Parameter/ Constituent	Lab Test Protocol & Number	Detection Level	Notification Level	Action Level	Cleanup Level
**Gasoline	BTEX	EPA Method 8020	100ppb	any amount	*	Site Specific
**Diesel	BTEX	EPA Method 8020		any amount	*	
	TPH	EPA Method 418.1 or Extended GC	10ppm	any amount	1000 ppm	Site Specific
Waste Oil	VOCs	EPA Method 8240	100 µg/kg	any amount	*	Site Specific

* 20 times the groundwater enforcement standard for specific compounds.

Contact: Chuck Schwer, Vermont Agency of
Environmental Conservation 802-241-3876

**Vermont encourages the use of Photoionization Device (PID) for field screening soils during initial site assessments.

Summary of Virginia Cleanup Standards for Hydrocarbon Contaminated Soil

Product	Parameter/ Constituent	Lab Test Protocol & Number	Detection Level	Notification Level	Cleanup Level
Gasoline	BTEX	EPA Method 8020	*	any amount	Site Specific/Risk Based
	TPH	Cal Luft Method Wisconsin GRO	10 mg/kg	any amount	Site Specific/Risk Based
Diesel	BTEX	EPA Method 8020	*	any amount	Site Specific/Risk Based
	TPH	Cal Luft Method Wisconsin DRO	10 mg/kg	any amount	Site Specific/ Risk Based
Waste Oil	TPH	SW-846 9701 Wisconsin TRPH	*	any amount	Site Specific/Risk Based

* PQL for constituents as stated in SW846. Note: Methods above are required for remediation monitoring under permit. During Site Characterization, Closure, etc., all EPA approved methods and Cal Luft Method for TPH are acceptable.

Contact: Dave Chance, Virginia DEQ
804-698-4288

Summary of Washington Cleanup Standards for Hydrocarbon Contaminated Soil

Product	Parameter/ Constituent	Lab Test Protocol & Number	Detection Level	Notification Level	Cleanup Level
Gasoline	Benzene	EPA Method 8020 or 8260	*	any amount	0.5mg/kg
	Ethylbenzene	EPA Method 8020 or 8260	*	any amount	20mg/kg
	Toluene	EPA Method 8020 or 8260	*	any amount	40mg/kg
	Xylenes	EPA Method 8020 or 8260	*	any amount	20mg/kg
	Total Lead	EPA Method 6010, 7420 or 7421	*	any amount	250mg/kg
Diesel	TPH	NWTPH-DX	*	any amount	200mg/kg**
Waste Oil	TCLP	EPA Method 1311	*	any amount	Analyte Specific
	PCBs	EPA Method 8080	*	any amount	1mg/kg
	Volatile Organics	EPA Method 8021 or 8260	*	any amount	Analyte Specific
	Phenols	EPA Method 8040 or 8270	*	any amount	Analyte Specific
	PAHs	EPA Method 8100 or 8270	*	any amount	1mg/kg
	Total Metals	EPA Method 6010 and 7000 series	*	any amount	Metal Specific

* Test Specific. ** Method B and C levels for TPH must be set on a site specific basis using the TPH Interim Policy. Note: Washington State has rating matrix for establishing cleanup standards. Cleanup levels shown are Method A numbers for routine cleanups. Method B and C also exist; Method B for "Residential" and Method C for "Industrial", which are risk-based. The Department of Ecology should be consulted on the applicability of Methods B and C. Method B levels may be lower to protect groundwater.

Contact: Steve Robb, Washington
Department of Ecology 360-407-7188

Summary of West Virginia Cleanup Standards for Hydrocarbon Contaminated Soil

Product	Parameter/ Constituent	Lab Test Protocol & Number	Notification Level	Action Level	Cleanup Level
Gasoline	Benzene	EPA Method 8020	any amount	50ppb	Site Specific
	Toluene	EPA Method 8020	any amount	10ppm total BTEX	Site Specific
	Ethylbenzene	EPA Method 8020	any amount	10ppm total BTEX	Site Specific
	Xylenes	EPA Method 8020	any amount	10ppm total BTEX	Site Specific
	TPH	EPA Method 8015 Modified*		50ppm	Site Specific
Diesel	Benzene	EPA Method 8020	any amount	50ppb	Site Specific
	Toluene	EPA Method 8020	any amount	10ppm total BTEX	Site Specific
	Ethylbenzene	EPA Method 8020	any amount	10ppm total BTEX	Site Specific
	Xylenes	EPA Method 8020	any amount	10ppm total BTEX	Site Specific
	TPH	EPA Method 8015 Modified*		100ppm	Site Specific

* Report GRO and DRO separately

Note: Some leaking underground storage tank sites may qualify for West Virginia's voluntary cleanup program, which utilizes Risk Based Corrective Action (RBCA).

Contact: Mike Sutphin, West Virginia Department of
Environmental Protection 304-558-6371

Summary of Wisconsin Criteria* for Hydrocarbon Contaminated Soil

Product	Parameter/ Constituent	Lab Test Protocol & Number	Detection Level	Notification Level	Action Level	Cleanup Level
Gasoline	GRO	WI DNR Modified GRO Method	**	any amount	10µg/kg	100µg/kg or Site Specific
	PVOC ¹	EPA Method 8260 or 5030/8020 or 5030/8021	**	any amount	Any Amount ⁵	*** or Site Specific
	VOC ³	EPA Method 3050/ 7420 or 3050/7421 or 3050/6010	**	any amount	Any Amount ⁵	50µg/kg or Site Specific
Diesel	Pb, Cd	EPA Method 3050/ 7420 or 3050/7421 or 3050/6010	**	any amount	Any Amount ⁵	8µg/kg or Site Specific
	DRO	WI DNR Modified DRO Method	**	any amount	10 µg/kg	100µg/kg or Site Specific
	PVOC	EPA Method 8260 or 5030/8020 or 5030/8021	**	any amount	Any Amount ⁵	*** or Site Specific
Waste Oil	PAH ³	EPA Method 8310HPLC 3540/8270 or 3550/8270	**	any amount	Any Amount ⁵	Site Specific
	PAH ³	EPA Method 8310HPLC 3540/8270 or 3550/8270	**	any amount	Any Amount ⁵	Site Specific
	VOC ^{2,3}	EPA Method 5030/8021 or 8260	**	any amount	Any Amount ⁵	Site Specific
	PVOC	EPA Method 5030/8020 or 5030/8021 or 8260	**	any amount	Any Amount ⁵	*** or Site Specific
	PCB	EPA Method 3540/8080 or 3550/ 8080	**	any amount	Any Amount ⁵	Site Specific

* Wisconsin Admin. Code NR720 ** Test Specific. ***Benzene-5.5µg/kg, Toluene-1500µg/kg, Ethylbenzene-2900µg/kg, Xylenes-1100µg/kg, 1,2, dichloroethane-4.9µg/kg.

¹Petroleum Volatile Organic Compounds-defined in Analytical Guidance. ²Sample at least once. ³See Analytical Guidance. ⁴At tank removal. ⁵Site specific-may require investigation, may require cleanup.

Contact: Carol McCurry, Wisconsin
Department of Natural Resources
608-266-3425

Summary of Wyoming Clean-up Standards for Hydrocarbon Contaminated Soil

Product	Parameter/ Constituent	Lab Test Protocol & Number	Detection Level	Notification Level	Action Level	Cleanup Level
Gasoline	Benzene	EPA Method 8020	0.1mg/kg	any amount	*	*
	Ethylbenzene	EPA Method 8020	0.1mg/kg	any amount	*	*
	Toluene	EPA Method 8020	0.1mg/kg	any amount	*	*
	Xylenes	EPA Method 8020	0.1mg/kg	any amount	*	*
Leaded Gas	Total Lead	EPA Method 289.2/ 6010	5mg/kg	any amount	*	*
	TPH	Modified 8015 GRO	4mg/kg	any amount	>30mg/kg >100mg/kg	30mg/l gw<50' 100mg/l gw>50'
Fuel Oils	BTEX same as Gasoline					
	TPH	Modified 8015 DRO	4 mg/kg	any amount	>100mg/kg	100mg/kg
Lubricating Oil	BTEX and TPH same as Fuel Oil					
Waste Oil	BTEX same as Gasoline					
	TPH	Extraction Method (GC)	5 mg/kg	any amount	>100mg/kg	100mg/kg
	Total Lead	EPA Method 239.9/ 6010	5 mg/kg	any amount	*	*
	Total Cadmium	EPA Method 213.1/ 6010	.5 mg/kg	any amount	*	*
	Total Chromium	EPA Method 218.1/ 6010	.5 mg/kg	any amount	*	*

* Site Specific. Note: Site Specific soil cleanup levels for organic compounds and metals are determined from an environmental fate/transport environmental risk assessment model contained in the Wyoming Water Quality Rules and Regulations, Chapter XVII, Underground Storage Tanks, Appendix A. Procedures for Establishing Environmental Restoration Standards for Leaking Underground Storage Tank Remediation Actions. Model is similar to ASTM RBCA.

Contact: LeRoy Feusner, Department of
Environmental Quality 307-777-7781